Materials Design Analysis Reporting (MDAR) Checklist for Authors

The MDAR framework establishes a minimum set of requirements in transparent reporting applicable to studies in the life sciences (see Statement of Task: doi:10.31222/osf.io/9sm4x.). The MDAR checklist is a tool for authors, editors and others seeking to adopt the MDAR framework for transparent reporting in manuscripts and other outputs. Please refer to the MDAR Elaboration Document for additional context for the MDAR framework.

Materials

Antibodies	Yes (indicate where provided: section/paragraph)	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	We provided. Please see Methods/paragraph 10.	

Cell materials	Yes (indicate where provided: section/paragraph)	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	We provided. Please see Methods/paragraph 3.	
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	We provided. Please see Methods/paragraph 3.	

Experimental animals	Yes (indicate where provided: section/paragraph)	n/a
Laboratory animals: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	There are no animals used in our study.	
Animal observed in or captured from the field: Provide species, sex and age where possible	There are no animals used in our study.	
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	There are no animals used in our study.	

Plants and microbes	Yes (indicate where provided: section/paragraph)	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)	There are no Plants and microbes used in our study.	
Microbes: provide species and strain, unique accession number if available, and source	There are no Plants and microbes used in our study.	

Human research participants	Yes (indicate where provided: section/paragraph)	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	We provided. Please see Methods/paragraph 1.	
Provide statement confirming informed consent obtained from study participants.	We provided. Please see Methods/paragraph 1.	
Report on age and sex for all study participants.	All study participants requested that their information	**n/a**

Design

Study protocol	Yes (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	Our study is not a clinical trial	**n/a**

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	Our study is not a clinical trial	**n/a**

Experimental study design (statistics details)	Yes (indicate where provided: section/paragraph)	n/a
State whether and how the following have been done**, or** if they were not carried out.	Our study is not a clinical trial	**n/a**
Sample size determination	Our study is not a clinical trial	**n/a**
Randomisation	Our study is not a clinical trial	**n/a**
Blinding	Our study is not a clinical trial	**n/a**
Inclusion/exclusion criteria	Our study is not a clinical trial	**n/a**

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	All the experiment were replicated 3 times in laboratory, Please see Methods/paragraph 11(Statistical analysis).	**n/a**
Define whether data describe technical or biological replicates	The data was described biological replicates Please see Methods/paragraph 11(Statistical analysis).	

Ethics	Yes (indicate where provided: section/paragraph)	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	We provided. Please see Methods/paragraph 1.	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	There are no animals used in our study.	**n/a**
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	Studies involving specimen and field samples were from participants, who provided written informed consent.	

Dual Use Research of Concern (DURC)	Yes (indicate where provided: section/paragraph)	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval	Our study is not subject to dual use research of concern	**n/a**

Analysis

Attrition	Yes (indicate where provided: section/paragraph)	n/a
State if sample or data point from the analysis is excluded, and whether the criteria for exclusion were determined and specified in advance.	Yes. Please see Methods/paragraph 11(Statistical analysis).	

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Yes. Please see Methods/paragraph 11(Statistical analysis).	

Data Availability	Yes (indicate where provided: section/paragraph)	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	We did not created datasets	n/a
If data are publicly available, provide accession number in repository or DOI or URL.	We do not disclose data	n/a
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	We do not disclose data	

Code Availability	Yes (indicate where provided: section/paragraph)	n/a
For all newly generated code and software essential for replicating the main findings of the study:	We provised, Please see Methods/paragraph 2	
State whether the code or software is available.	We provised, Please see Methods/paragraph 2	
If code is publicly available, provide accession number in repository, or DOI or URL.	We provised, Please see Methods/paragraph 2	

Reporting

Adherence to community standards	Yes (indicate where provided: section/paragraph)	n/a
MDAR framework recommends adoption of discipline-specific guidelines, established and endorsed through community initiatives. Journals have their own policy about requiring specific guidelines and recommendations to complement MDAR.		
State if relevant guidelines (eg., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (eg., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.	ICMJE guidelines were followed, as the journal follows ICMJE recommendations for publication	

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